SECTION 1
GENERAL

1.1 PURPOSE OF THE SYSTEM SPECIFICATION. The *System Specification (SS) for the Defense Software Repository System (DSRS)* is written to fulfill the following objectives:

a. To provide a detailed definition of the top-level design of the DSRS functions,

b. To communicate details of the on-going analysis between the user's operational personnel and the appropriate development personnel, and

c. To define in detail the interfaces with other systems and the facilities used to accomplish the interfaces.

1.2 PROJECT REFERENCES. The Defense Software Repository System (DSRS) is an automated repository designed primarily to assist users in the reuse of assets. The project sponsor is the Defense Information Systems Agency/Joint Interoperability and Engineering Organization/ Center for Operational Support (DISA/JIEO/CFOS). The DSRS is operational at the DISA/JIEO/CFOS Software Reuse Program (SRP) site in Falls Church, VA, and at other remote sites designated by the SRP.

The following is a list of project references used during development of this System Specification (SS). Unless otherwise indicated, all references are UNCLASSIFIED:

a. **Project Request or Other Initiation Documentation**

(1) *DSRS Interoperation Plan*, December 3, 1994.

(2) *DSRS/ASSET/CARDS Library Interoperation*, Final, Engineering Working Group, July 1993.

b. **Risk Analysis Studies**

A formal quantitative risk analysis for the DSRS has been conducted for DISA's implementation of the DSRS.

(1) *Risk Assessment of Defense Software Repository System* (DSRS), Center for Information Systems Security, August 1994.

(2) *DSRS Security Test and Evaluation* (STE), Center for Information Systems Security, October 1994.

c. **Other Pertinent Manuals or Documents**

(1) The DSRS system documentation follows the format standards of DoD-STD-7935A. In addition to this SS, it consists of the following: Functional Description, Database Specification, User Manual (for MS-Windows and X/Motif), Librarian Manual (for MS-Windows), Maintenance Manual, System Administration Manual, Implementation Procedures, and Test Plan, and Test Analysis Report.

(2) The DSRS security documentation consists of the following: Trusted Facility Manual, System Security Plan, Contingency Action Plan, and Security Features User Guide (included in the User Manuals).

d. **Standards or Reference Documentation**

(1) Programming Conventions

(a) X/Motif-based DSRS

This version will be written in ANSI C and C++. Pro*C is used to generate low-level calls to the database.

(b) Windows-based DSRS

This version will be written in Visual Basic using SQL*Net (Librarian only) and TCP/IP messages to retrieve information from the database.

(2) DoD Standards and References

The following references are used for the development of the system and its documentation:

(a) DoD-STD-7935A, *Military Standard - DoD Automated Information Systems (AIS) Documentation Standards,* 31 October 1988.

(b) *Technical Reference Model for Corporate Information Management, Version 1.1*, 27 November 1991.

(c) DoD Directive 5200.28, *Security Requirements for Automated Data Process (ADP) Systems,* 21 March 1988.

(d) DoD Directive 5200.1-R, *Information Security Program Regulations*, June 1986.

(e) CSC-STD-004-85, *Guidance for Applying the Department of Defense Trusted Computer Evaluation Criteria in Specific Environments*, (also known as "The Yellow Book"), 25 June 1985.

(f) DoD Directive 5200.28-STD, *Department of Defense Trusted Computer System Evaluation Criteria*, (also known as "The Orange Book"), 26 December 1985.

(g) DISA Instruction 6030-230-19, *Security Requirements for Automated Information Systems* (AIS), August 1991.

(3) System Documentation

(a) *System and Network Administration*, Sun Microsystems, Inc., 1990.

(b) *Microsoft Windows User's Guide*, Microsoft Corporation, 1991.

(c) *Microsoft MS-DOS User's Guide*, Microsoft Corporation, 1993.

e. Other Publications (Non-Government)

(1) *Object-Oriented Analysis and Design with Applications,* Second Edition, Grady Booch, the Benjamin/Cummings Publishing Company, Inc., 1994.

(2) *Using the Booch Method: A Rational Approach,* Iseult White, The Benjamin/Cummings Publishing Company, Inc., 1994.

1.3 ACRONYMS AND TERMS.

1.3.1 Acronyms.

ADP Automated Data Processing

AIS Automated Information System

ANSI American National Standards Institute

ARF Account Request Form

ASSET Asset Source for Software Engineering Technology

CARDS Comprehensive Approach to Reusable Defense Software

CD-ROM Compact Disk-Read Only Memory

CFSW	Center for Software
COTS	Commercial-Off-the-Shelf
CPU	Central Processing Unit
DAA	Designated Approving Authority
DAC	Discretionary Area Control
DBMS	Database Management System
DDN	Defense Data Network
DISA	Defense Information Systems Agency
DOD	Department of Defense
DSRS	Defense Software Repository System
FD	Functional Description
FTP	File Transfer Protocol
GUI	Graphical User Interface
HW	Hardware
IP	Internet Protocol
JIEO	Joint Interoperability and Engineering Organization
KB	Kilobyte
MB	Megabyte
MHz	MegaHerz
MODEM	Modulator/Demodulator
MS	Microsoft
MSQL	Minerva Structured Query Language
PC	Personal Computer

PPP	Point-to-Point Protocol
RA	Reusable Asset
SLIP	Serial Line Internet Protocol
SOP	Standing Operating Procedures
SQL	Structured Query Language
SRP	Software Reuse Program
STE	Security Test and Evaluation
SW	Software
TCB	Trusted Computing Base
TCP	Transport Control Protocol
TLSU	Top-Level Software Unit
UBS	Unclassified but Sensitive
UID	Unique Identifier
WWW	World Wide Web

1.3.2 Terms.

Architecture	The logical and physical structure of a system, forged by all the strategic and tactical design decision's applied during development.
Asset	See entry below for RA.
Association	A relationship denoting a semantic connection between two classes.
Attribute	A part of an aggregate object.
Booch Method	A software-development method used to develop and communicate the design of a system that will be implemented primarily in software. It is an object-oriented method.
Candidate RAs	A collection of assets that have been identified by searching the DSRS catalog.

Cardinality	The number of instances that a class may have; the number of instances that participate in a class relationship.
Catalog	A collection of assets and their related information.
Class	All abstraction of real-world items. It captures the common structure and common behavior of a set of objects.
Class Category	A logical collection of classes, some of which are visible to other class categories, and others of which are hidden. The classes in a class category collaborate to provide a set of services.
Class Diagram	A diagram used to show the existence of classes and their relationships in the logical design of a system.
Client	The software operating on a user's PC that communicates with the software operating at the server where the DSRS repository resides.
Container Class	A class whose instances are collections of other objects. Container classes may denote homogeneous collections (all of the objects in the collection are of the same class) or heterogeneous collections (each of the objects in the collection may be of a different class, although all must generally share a common superclass).
Control Class	A class which models functionalities that are not naturally tied to any particular class. They unite objects that collaborate to provide some behavior.
Cooperating DSRS Site	A site that chooses to make its assets available for extraction by other DSRS sites.
Domain	The major category of assets to search.
Encapsulation	The process of compartmentalizing the elements of an abstraction that constitute its structure and behavior; encapsulation services to separate the contractual interface of an abstraction and its implementation.
Ethernet	The predominant form of local area network technology used with TCP/IP.
Extract	A function available in the DSRS software that allows the user to obtain desired RAs.
Foreign Site	Non-DSRS remote site that is interoperable with the DSRS.

Inheritance A relationship among classes, wherein one class shares the structure or behavior defined in one (single inheritance) or more (multiple inheritance) other classes.

Internet A worldwide network of networks connecting computers at universities, research laboratories, and commercial and Government sites.

Interoperability The concept of allowing multiple installations of the DSRS to communicate with each other and other reuse libraries, sharing catalogs and exchanging Ras.

Keywords A set of terminology to convey the properties that an RA may have.

Librarian
(1) The individual who maintains the DSRS catalog.
(2) A type of user who functions as a librarian and has a subset of the rights to perform any action on the DSRS.

Local Site The site of the local repository.

Message An operation that one object performs upon another.

Metadata Descriptive information used to describe an asset.

Metric A characteristic of an RA that is assigned a numeric value.

Object Diagram Part of the notation of object-oriented design, used to show the existence of objects and their relationships in the logical design of a system.

Operation Some work that one object performs upon another in order to elicit a reaction. All of the operations upon a specific object may be found in free subprograms and member functions or methods.

RA Reusable Asset. An asset that has potential to be used more than once. Types of reusable assets include architectures, designs, software, test suites, software tools, document type definitions, documents and templates, and reuse library support items.

RA State There are three RA States: Certified, Active and Archived. Only Active RAs are available to be candidate RAs. Certified RAs are being evaluated through certification procedures prior to being made available to users. Archived RAs have been identified as obsolete, but archiving is safer than deleting. The files of Archived RAs still appear on the system.

Remote Site	DSRS site that is interoperable with the DSRS.
Repository	The database entries and all the associated files that the database references.
Server	The machine where the DSRS resides and the DSRS software operating there that communicates with the client software operating on the user's PC.
Site	An installation of the DSRS server software.
Supervisor	A type of user who functions as a librarian and has the rights to perform any action on the DSRS.
System Administrator	An individual who maintains: (1) the computer system on which DSRS is operating, and (2) the tools that are required for the execution of the DSRS, such as the ORACLE database.
Telnet	A TCP/IP application for remote terminal emulation.
UID	Unique Identifier. An identifier for the RA that supports interaction with foreign (non-DSRS) sites.
Usage Log	Log of RAs that have been extracted by programmer-level users. The values of this log may be viewed in the DSRS Librarian tool.
Use Relationship	Indicates a client/supplier relationship. The client in some manner depends upon the supplier to provide certain services.